

**Dietary Intake and Health Outcomes: Final Report
Appendices A – H**

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Appendix A: Advisory Committee

1. Advisory Committee Members & Meeting Attendance

2. Advisory Committee Meeting Minutes

Meeting 1: December 9, 1998, Atlanta Georgia

Meeting 2: June 30, 1999, Boston, Massachusetts

Meeting 3: September 13, 1999, Boston, Massachusetts (Task Force on Data and Program Planning)

Meeting 4: September, 11, 2000, Boston, Massachusetts

ERS/USDA Dietary Intake and Health Outcomes Cooperative Agreement Advisory Committee Meeting Attendance

| Name | Title | Organization | Meeting 1: 9/9/98 | Meeting 2: 6/30/99 | Meeting 3: 9/13/99 | Meeting 4: 9/11/00 |
|---------------------------|--|--|----------------------|-----------------------|-----------------------|-----------------------|
| John Weimer | Project Manager | Economic Research Service-USDA | X | X | | X |
| Deborah Klein Walker, EdD | Assistant Commissioner | Bureau of Family and Community Health, The Commonwealth of Massachusetts, Executive Office of Health and Human Services, Department of Public Health | | X | X | X |
| Walt Willett, MD, DrPH | Chair | Department of Nutrition, Harvard School of Public Health | X | X | | |
| Graham Colditz, MD, Dr PH | Professor of Medicine | Harvard Medical School, Brigham and Women's Hospital, Channing Laboratory | X | X | X | X |
| Jane Gardner, ScD | Maternal and Child Health Consultant | | X | X | X | X |
| Elizabeth Barden, PhD | Nutrition Projects Manager | Massachusetts Department of Public Health Office of Statistics and Evaluation | | | | X |
| William H. Dietz, MD, PhD | Director | Division of Nutrition and Physical Activity, Center for Disease Prevention and Health Promotion | | X | | |
| Jan Kallio | Massachusetts WIC Program | The Commonwealth of Massachusetts, Executive Office of Health and Human Services, Department of Public Health | | X | X | X |
| Mary Kelligrew Kassler | Director | Massachusetts WIC Program, The Commonwealth of Massachusetts, Executive Office of Health and Human Services, Department of Public Health | X | | | |
| Jill Leppert | WIC/MCH Nutrition Coordinator | North Dakota WIC Program | X | X | X | X |
| Patricia McKinney | | Food and Nutrition Service-USDA | X | X | X | X |
| Kelly Scanlon, PhD | Epidemiologist, Maternal and Child Nutrition Branch, Nutrition and Physical Activity | National Center for Chronic Disease Prevention and Health Promotion | X | | X | X |
| Carol West Sutor, ScD, RD | Nutrition/Maternal and Child Health Consultant | | X | X | X | X |
| Jennifer Tuttleman | Bureau of Family and Community Health | The Commonwealth of Massachusetts, Executive Office of Health and Human Services, Department of Public Health | | | | X |
| Diane Clark, M.P.H., R.D. | Maternal and Child Nutrition Branch, Division of Nutrition and Physical Activity | National Center for Chronic Disease Prevention and Health Promotion | | | | |
| Lucy Zahler | | Missouri Bureau of Nutrition Services and WIC | | X | X | |
| Donna Mehrle, MPH, RD, LD | Planner | Division of Nutritional Health and Services, Missouri Department of Health and Senior Services | X | | | |
| Cathy Berkey, ScD | Lecturer in Biostatistics | Channing Laboratory | | | | |

ERS/USDA Dietary Intake and Health Outcomes Cooperative Agreement Advisory Committee Meeting Attendance

| Name | Title | Organization | Meeting 1: 9/9/98 | Meeting 2: 6/30/99 | Meeting 3: 9/13/99 | Meeting 4: 9/11/00 |
|----------------------------------|----------------------------------|--|----------------------|-----------------------|-----------------------|-----------------------|
| Robin Blum, SM | Project Coordinator | Department of Nutrition, Harvard School of Public Health | X | X | X | X |
| Liz Metallinos-Katsaras, PhD, RD | Assistant Professor of Nutrition | Department of Nutrition, Simmons College | | | X | X |
| Helaine Rockett, MS, RD | Research Nutritionist | Channing Laboratory | X | X | X | X |

AGENDA:

1. Introductions and review of agenda
 2. Project goals and objectives
 3. History and current use of the HSFFQ and demonstration
 4. Status of use of HSFFQ in the states
 5. USDA's interest
 6. CDC's interest
 7. Methods used to validate FFQs
 8. Methods proposed to further develop the HSFFQs use as a teaching tool
 9. Work on dietary guidelines and their use in this tool
 10. Use of aggregated data
 11. Uses in epidemiology
-

1) Advisory Committee Members in Attendance:

Walt Willett (advisory board co-chair), Department of Nutrition, Harvard School of Public Health
Jill Leppert, North Dakota WIC
Mary Kassler, Massachusetts WIC
Patricia McKinney, F and Nutrition Service-USDA
John Weimer, Project Manager, Economic Research Service-USDA
Carol Suitor, Nutrition & MCH Consultant
Jane Gardner, Department of MCH, Harvard School of Public Health
Graham Colditz, Harvard Medical School, Brigham & Women's Hospital, Channing Laboratory
Helaine Rockett, Research Nutritionist, Channing Laboratory, Harvard School of Public Health
Robin Blum, Project Coordinator, Harvard School of Public Health
Morgan Ford, Research Assistant, Harvard School of Public Health
Kelly Scanlon, MCH Nutrition, CDC
Donna Mehrle, Missouri WIC

Members unable to attend:

Deborah Klein-Walker, Assistant Commissioner, Massachusetts Department of Public Health
Elizabeth Metallinos Katsaras, Nutrition Projects Manager, Massachusetts Department of Public Health

Guests:

Donna Hynes, USDA
Jan Kalio, Massachusetts WIC

2) Project Goals and Objectives- Graham Colditz:

- ◆ Current funding from USDA (2 years)
- ◆ Aims:
 - Look at how well FFQ can work in children: further validation in African American & Hispanic children; Native American children's validation done in North Dakota w/funding from Kellogg Foundation
 - How to aggregate data from various states to do surveillance (3 states: ND, MO & MA), summarize data, & provide to states, to determine what is useful at a national level?
 - Relate children's diet to health outcomes: obesity in childhood, explore other outcomes

3) History and Current Use of the Harvard Service Food Frequency Questionnaire (HSFFQ) & Demonstration- Jane Gardner and Helaine Rockett:

*** HFFQ Development handout reviewed at this time.**

- ◆ Identify FFQ to serve a number of programs & populations while maintaining research & service quality of FFQ: will it work for epidemiology & service?
- ◆ The Prenatal FFQ (PFFQ) served as the basis for the development of the women's and children's tools. The direct entry version was developed with a goal of being usable by low literacy (4th to 6th grade) populations. Adult literacy service agencies gave feedback on the "usability" of the FFQ and observed client behavior while using the system. Rhode Island health department, Brigham & Women's Hospital, and Maternal and Child Health agencies have also been involved.
- ◆ The fourth page has been used in different ways by each state, and there is interest in some standardization of this page.
- ◆ Tool has the capacity for linkage with Nurses' Health Study database, which makes the epidemiological goals much easier to achieve.

Background of NHS (Nurses' Health Study FFQ)- Walt Willett:

- ◆ Interested in relationship of diet and & heart disease outcomes
- ◆ Identified foods most predictive of 12 predetermined nutrients → 61 foods on 1st FFQ
- ◆ Refined to get more complete picture of diet (fine tuned/simplified items); changes with new hypotheses & food supply changes
- ◆ There is documented importance of diet in disease outcomes:
 - total fat/total carbohydrates irrelevant
 - type of fat/carbohydrates is important
 - diabetes & type of carbohydrate

Marjorie Rodan's study:

- ◆ Used MA sites and compared MA diet assessment tool with HSFFQ
- ◆ Feasible to use HSFFQ; client & provider acceptance was high

Demonstration – Jane Gardner and Helaine Rockett

***Both the paper and direct entry versions were demonstrated**

- ◆ Foods between states are slightly different because of differences in diet.
- ◆ Either the client or a WIC employee may enter data into the computer.
- ◆ USDA asked: how does a new state obtain this? Cost?
 - \$8000 to access with technical assistance per year
 - 2 parts of analysis: food nutrient analysis done at Harvard and 4th page data sent in ASCII file format for states to analyze

4) Status of Use in States- Jill Leppert, Donna Mehrle, Donna Kassler:

North Dakota- Jill Leppert:

- ◆ Have used HSFFQ 5 years with WIC program.
- ◆ Have 27 contracting sites and 100 offices.
- ◆ There are 25 travel sites → local agencies, which take a laptop and maybe a printer to another agency where data are entered.
- ◆ Working toward using solely direct entry at all sites.
- ◆ No **standard** time within certification process for data entry...depends on the site.
- ◆ Have found that a very small percentage of people are unable to complete the questionnaire.
- ◆ Did a verification study that was a boost for the staff as they previously thought survey wasn't valid. Later did a staff survey that revealed staff view the FFQ positively.
- ◆ Consistency from agency to agency is a large reason why FFQ is useful.
- ◆ Use tool for eligibility purposes.
- ◆ Feel that this form gives them more time to do nutrition education
- ◆ Use HSFFQ to determine diet risks; use with other risks for certification; rare to find someone who doesn't "fit" risk requirements
- ◆ Children come every 6 months; pregnant women- re-certify at postpartum & again at 6 months postpartum if breastfeeding; high risk mom's get 1 month follow-up
- ◆ Sometimes mothers have to fill out more than one questionnaire because of having more than one child.

Missouri- Donna Mehrle:

- ◆ Got interested in HSFFQ by seeing the success North Dakota was having.
- ◆ Altered food scarcity questions.

Advisory Board Meeting Minutes

December 9, 1998 Atlanta, GA

- ◆ Piloted the HSFFQ in 4 sites and used it to validate the Farmers Market study (with an insert page); grant to look at impact of farmers market vouchers on fresh fruit & vegetable intake (created insert page)
- ◆ 123 local agencies are involved...in process of getting the HSFFQ to all of those agencies.
- ◆ Found that, within Missouri sites, only 7.8% of children are eating an adequate diet.
- ◆ Working on an agreement with schools to do HSFFQ, along with gathering height and weight data.
- ◆ Doing direct entry in some places (depends on site- some don't want kids "playing" with computers)
- ◆ Direct enter use depends on space & provider comfort (not on client capabilities)

Massachusetts- Mary Kassler:

- ◆ Not quite using the tool yet, but have field-tested.
- ◆ Have a very diverse population, not only in terms of ethnicity, but also rural vs. urban (i.e. published information in 9 different languages)
- ◆ Have 155 sites for 136,000 people; 350 staff = 50% professional, 50% paraprofessional (tend to be bi-lingual)
- ◆ Want to improve their nutrition education techniques.
- ◆ Getting funding from the CDC to pilot 4th page food scarcity questions.
- ◆ Asian and Hispanic populations may need questionnaires designed specifically for their ethnic group because of issues like foods listed and language (i.e. food list sufficient to measure their diet; populations within populations; assimilation; availability of ethnic food choices; portion sizes).

5) USDA's Interest- John Weimer & Patricia McKinney:

- ◆ Shift in responsibility for grant from Food and Nutrition Service (FNS) to Economic Research Service (ERS)
- ◆ Funding process was extremely competitive, great expectations for this project
- ◆ FNS (Patricia McKinney): involved with Block study, personnel turnover
- ◆ WIC Dietary Assessment Task Force Recommendations
- ◆ Based on these recommendations: FNS collaboration with Harvard (completed July 1991)
- ◆ 1992 RFP: Block evaluated 2 FFQs, results in 1994- not good correlations
- ◆ Dr. Dennison (NY) looked at child eating behavior NOT foods; validation study of child eating habits assessment tool (NY FFQ compared to HFFQ), involved shelf inventory at home, etc. *not published*, conclusion: FFQ still best estimate of a child's diet
- ◆ FNS: is tool sensitive enough to evaluate nutrition education interventions in Food Stamp Programs?
- ◆ Overview of WIC tools:
 - ◆ 79% FFQ, 79% 24-hr recall (some places use both)

6) CDC's Interest- Kelly Scanlon:

- ◆ CDC coordinates two major surveillance systems, one for kids and one for pregnant women in 22 states. These states send in clinic records for children under 5 years and pregnant women.
- ◆ Have looked at things like anemia and growth retardation, but are lacking information on diet.
- ◆ The CDC is interested in monitoring trends and looking at compliance with recommendations.

- ◆ They do their surveillance primarily on a volunteer basis.
- ◆ Different states pilot particular questions (about things like iron and anemia).
- ◆ Made note that Arizona questionnaire is somewhat different (maybe brief for validation purposes) than the other states. Walt pointed out that this may be okay as long as comparisons can be made between Arizona and the other states.

7) Methods Used to Validate FFQs – Walt Willett:

Approaches:

1. Compare means (this doesn't account for individual data)
 2. Proportion total intake accounted for by foods on a questionnaire y (indirect, artificial)
 3. Reproducibility
 4. Validity (compare our questionnaire with a "gold" standard dietary intake)
 5. Correlation with a physiologic response
 6. Comparison of biochemical markers
 7. Ability to predict disease
-
- ◆ Dietary records are time consuming, so dietary recalls are better.

NHS Design- Walt Willett:

- ◆ Questionnaire was completed then dietary records from 200 women for four 1-week periods were completed and a repeat questionnaire was completed at year's end.
- ◆ Randomly select 3 days from diet record and correlate with FFQ diet reports to validate.
- ◆ Repeated the validation with two 1-week diet records.

What's been Done with HSFFQ– Graham Colditz:

- ◆ C. Suitor's study of low-income, pregnant women in MA showed correlations comparable to those found in research setting (Correlations exceeded 0.5 for protein, calcium iron, zinc, vitamin B-6, and C. vitamin A showed lower performance)
- ◆ E. Wei has expanded the number of nutrients from C. Suitor's study
- ◆ Children in North Dakota (3, 24-hr recalls- most over phone and 2 HSFFQs); compared means between recalls and HSFFQs; correlations; for about 15 nutrients $r \geq 0.50$ (Correlations ranged from 0.30 for fiber to 0.65 for sucrose. Carbohydrates, total fat, cholesterol, vitamins A, C, E, B1, B2, niacin, folate, B6, B12, calcium, magnesium, iron all had correlation coefficients > 0.50)
- ◆ Performance of HSFFQ by age and race: 1-2 years: 0.57; 3-5 years: 0.55; Native American: 0.56; White 0.52
 - ◆ 1 month time period
 - ◆ Baseline FFQ → 3 recalls → end FFQ
 - ◆ Recruited clients from WIC program
- ◆ Currently: validation in Native American pregnant women in North Dakota
 - ◆ Recalls early in pregnancy & later in pregnancy (not typical of WIC)

- ◆ Some are at 1st visit, others have been certified before

Questions

- ◆ What's the learning curve? ~3 months for providers
- ◆ Would this be valid to use as ONLY eligibility criteria? No

Future

- ◆ Evaluation of performance in African American and Hispanic populations.
- ◆ 150 African American and 150 Hispanic children using design parallel to N.D.
- ◆ USDA contract allows for a broader understanding of the validity of the FFQs.
- ◆ Issues include urban vs. rural Black populations and Mexican vs. Puerto Rican populations.

8) Methods proposed to further develop the HSFFQs use as a teaching tool- Jane Gardner:

*At this time we went over the focus group questions handout

- ◆ Jane will conduct the focus groups in ND in March.
- ◆ Suggestions: Add question about what dietitians would like help with.
- ◆ Describe the nutrition education you would provide.
- ◆ Do we plan to use paraprofessionals? No.
- ◆ Instead of posing question about printout in an open-ended fashion, bring in some examples of possible printouts and have people choose their favorite.
- ◆ Maybe do focus groups with WIC participants?
- ◆ Is there anything else we can do for them on printout?
 - Focus on inadequacy & excesses
 - % of calories coming from what top 1-5 foods
 - Total fat vs. saturated fat; trans fats, etc.
 - Fiber- need to refine tool & could have better assessment
 - Different printouts for client & provider
 - RDAs vs. foods/food groups (pyramids)
 - Too much focus on “bad” things; what about “hey, you’re doing’ good at this”

Walt Willett brought up other ideas/issues:

- ◆ Changes/modifications to FFQ:
- ◆ Using format of GUTS questionnaire?
 - Easier of filling out, prevent over reporting?
- ◆ Helaine will send copy of GUTS FFQ to everyone
- ◆ Ask about alternative format in focus groups
 - Possibly do validation in direct enter format- this is format closest to GUTS format
- ◆ Fiber issues
 - Split whole grain bread & white bread

- More of a breakdown of cereals
- ◆ Way to get at different types of fat
- ◆ Utilize 4th page, this implies that there would be some 'standard' questions on all 4th pages

9) Dietary Guidelines- Carol Suitor:

*** Carol distributed a handout.**

- ◆ Sticky time to be making these decisions (what we should use as recommendations on printout)
- ◆ Really need to consider these issues as a group
 - What do we want to recommend?
 - Do we need to have recommendations (e.g. fat)?
 - Do we delete current recommendations on ND & MO printouts?
- ◆ Should stay away from making recommendations in areas not definitive.

10) Use of Aggregate Data- Helaine Rockett:

- ◆ HSFFQ data from WIC sites are sent to Harvard on disk or as compiled ASCII file for analysis.
- ◆ HSFFQ data are then cleaned (test entries are taken out).
- ◆ Contributing states get the following data every 6 months:
 - Mean nutrients
 - Frequency of foods for each food group
 - Top 10 foods contributing to specific nutrients
 - Presented in CDC age groups by status (children by age, pregnant, non-pregnant, lactating) & by site
- ◆ What aggregate info is useful for program planning & evaluation? Do states need more or different information?
 - People just entering vs. those on WIC for a time period
 - Info based on pregnancy trimesters (would have to do 2 FFQs during pregnancy)
 - Frequency of milk by type
 - CDC: % obtaining/reaching 100% of RDA from food (analysis does not include vitamins)
 - Nutrient densities (INQ): take into acct. over & under reporting
 - Vitamin supplement frequency (4th page)
 - Use of quartiles & SD; range: 10th & 90th %tiles
 - Analysis based on risk codes (e.g. under weight, overweight, anemic)

11) Uses in Epidemiology- Graham Colditz:

- ◆ North Dakota Hypothesis – N-3 fatty acid and birth weight, low birth weight and transfatty acid, birth weight and folate, fruits, vegetables.

Diet and Health Effects in Children

- A. Obesity → High fat diet at age 5 increase obesity? VS. fruits, vegetables, fiber decrease obesity?
- B. Asthma → Wheeze/asthma is leading cause of morbidity in children. Add question about asthma?

C. Other ideas:

- worth looking at what's on birth certificate
- pregnancy & hypertension
- physical activity (MA pilot project questions- working with Patti Freedson to validate; ND has done crude activity survey)
- energy intake vs. energy expenditure
- parent feeding strategies, role in obesity (Minnesota & Boston, M. Gillman, 5 - 7 pilot questions w/CDC funding)
- food scarcity & diet quality beginning to end of month/supplement period

Tasks to be accomplished by June 1999

1. HSFFQ revisions for review
2. Linking of data: decisions in each state
3. Use of data for program planning and evaluation recommendations
4. Obesity study progress report
 - 1) Epidemiologic study of diet and obesity & study of diet and diabetes during pregnancy

ADVISORY COMMITTEE FOR THE DIETARY INTAKE, ERS/USDA GRANT

Wednesday, June 30, 1999

Chair: Deborah Klein Walker

Agenda

8:30 AM – Continental Breakfast

Food Frequency Questionnaire

Universal FFQ with Revisions

Food Groupings

Printout for Professional and Client

Helaine Rockett

Carol Suitor

Jane Gardner

Progress Reports from Each State

North Dakota

Missouri

Massachusetts

Jill Leppert

Lucy Zahler

Jan Kallio

Program Planning and Evaluation

Uses

Reports on Each State's Aggregating Data

Discussion

Vision – Future Uses

Bill Dietz

Jill Leppert and Lucy Zahler

Bill Dietz

12:30 PM - Lunch

Validation

Update of Children's FFQ in African

American/Hispanic Populations

Robin Blum

Eligibility Analysis

Graham Colditz

Epidemiology

Analysis Plan – Diet and Obesity

PK Newby

Future Plans and Priorities

Financial Considerations

Fourth Page Considerations

Graham Colditz

Bill Dietz

4:30 PM – Meeting Adjourns

In Attendance:

Deborah Klein Walker (Committee Chair), Assistant Commissioner, Massachusetts DPH

Walt Willett (Committee Co-Chair), Department of Nutrition, Harvard School of Public Health

Bill Dietz, Director, Division of Nutrition and Physical Activity, CDC

John Weimer, Project Manager, ERS-USDA

Carol Suitor, Nutrition & MCH Consultant

Jane Gardner, Department of MCH, Harvard School of Public Health

Graham Colditz, Harvard medical School, Brigham & Women's Hospital, Channing Laboratory

Helaine Rockett, Research Nutritionist, Channing Laboratory, Harvard School of Public Health

Robin Blum, Project Coordinator, Department of Nutrition, Harvard School of Public Health

Morgan Ford, Research Assistant, Harvard School of Public Health

Lucy Zahler, Missouri WIC

Jill Leppert, North Dakota WIC

Kirsten Newby, Doctoral Student, Department of Nutrition, Harvard School of Public Health

Jan Kallio, Massachusetts WIC

Patricia McKinney, FNS-USDA

Food Frequency Questionnaire

Universal FFQ with Revisions – Helaine Rockett

- The foods used on the universal FFQ come from 1) the Nurses' Health Study questionnaire, and 2) the 1985 CSFII list of the 100 most frequently eaten foods.
- The foods on the questionnaire are placed in accordance with how they're typically eaten (for example, breakfast foods are grouped together).
- Although the layout for the universal FFQ is similar to that of each individual state's, there are some differences. These include:
 1. Only listing orange juice, grapefruit juice, and other juice
 2. Listing the word melon only, not specifying type of melon
 3. Including fruit cocktail
 4. Separating pasta from pasta sauce
 5. Separating salad dressing and mayo
 6. Not including pumpkin pie
 7. Combining all beans into one line
 8. Putting all of the entrees together (for example, fish and chicken)
 9. Adding in burritos and tacos
- The fourth page of the universal FFQ includes questions about the type of bread, margarine, and cereal used, vitamins, fried foods and type of fat used to fry, baking.
- Some of the benefits of using the universal questionnaire include having each state using a uniform tool (allowing better comparison between states), and improving nutrition education.
- The universal FFQ will be available in Women's (pregnant, lactating), Children's, English, and Spanish versions.

⇒ See slides titled **Universal FFQ with Revisions** for more details.

DISCUSSION ABOUT UNIVERSAL FFQ

Do we plan to run the universal FFQ by the National Association of WIC Directors? Deborah Walker says we should make sure we check with the states. If we want them to comply, we have to let them know what's going on.

Should we get someone to do an independent evaluation of the tool? Jane Gardner doesn't think this is possible as the tool must be adopted and utilized for at least 3 months before it can be validated.

The universal FFQ must be updated based on fortification changes. Some expressed that because the composition of food continuously changes, we must be prepared to frequently update the nutrient database. The universal FFQ is not the kind of thing we can hope to pay for once.

It is up to the individual states to utilize the universal tool or to continue using their own version of the FFQ.

Food Groupings – Carol Suitor

- The food groupings presented in the handout were suggestions only, nothing is laid in stone.
- Decided to separate out whole and ½ servings, so they can be properly counted.
- Grains – need to decide if things like cookies and cake should be included in this group. Want to avoid a “good food vs. bad food” presentation.
- The printout - Foods listed as excellent sources of vitamin A and C are included on the printout now, but need to decide about adding Folate. Foods to be listed as excellent sources of Folate are beans, spinach, liver, and cold cereal.
- Currently, each state has different nutrient levels. Someone suggested we move toward using the food pyramid as a standard because that’s what the general population is familiar with.

DISCUSSION ABOUT FOOD GROUPS

Cakes and cookies could be counted for very small servings within the breads and cereals food group.

May want to focus on saturated fats instead of fats as a whole.

The challenge is making a research tool that is useful for counseling. Participants really like getting the printout, so it is important that the information on that printout is accurate.

North Dakota doesn’t give the printout to the clients to take home because they have some questions about the accuracy of some info. Instead they discuss the printout with the client.

Printout for Professional and Client – Jane Gardner

Jane went over her handout summarizing results of the North Dakota dietician focus groups.

See Jane’s handout for details.

Progress Reports from Each State

North Dakota – Jill Leppert

- Began using the FFQ 6 years ago for eligibility purposes. Also wanted uniformity across the state.
- Most women begin the program in their 2nd or 3rd trimester of pregnancy.
- The staff in North Dakota like the tool, although there is often discussion about why certain foods are categorized as they are.
- The 4th page was developed out of need for eligibility info. The data from the page are not captured, so no aggregate data is available.

- Will soon be going to a new computer program, and the need for the fourth page may change.
- Would like to add activity because of a Childhood Obesity Study taking place.
- Currently validating FFQ for pregnant moms. Most of the women are white, trying to get more Native American. It's been difficult to get women to come back for the 2nd FFQ.
- There is concern about how validation is done in North Dakota not matching up with how it is done in other states.

Missouri – Lucy Zahler

- Started using FFQ in November of 1997.
- Piloted in 9 agencies.
- In total there are 115 agencies and about 250 clinics.
- Going state wide with the program. Everyone should be converted by October 2000.
- 57 clinics are using the program now. Others will start as soon as they receive new computers and equipment.
- The tool is used for client education and dietary risk evaluations.
- The food insecurity questions on the 4th page come from a longer list of questions from the CDC. The staff didn't like the questions very much (felt they might be demeaning the client). But clients didn't seem to mind the questions.
- Will start piloting the youth FFQ in September.
- Have begun to discuss how they may use their data in a larger way.
- Y2K issues: have 2 programs, 1 for Y2K computers and a 2nd for non-Y2K compliant computers (really old computers).

Massachusetts – Jan Kallio

- Networked systems/LANS (Local Area Networks)
- Have clinics that function as stand alones.
- Have 350 staff people split according to professional level.
- 56% of the participants are non-white.
- Focus is on the participant and how to best present nutritional information.
- Currently have 2 programs running - 1 in the Berkshires and another in Franklin. A 3rd program will be starting soon in Fall River.
- Always pilot FFQ to pick up flaws.
- Have found that clients really like the printout. Staff also like printout because it makes analysis much more simple.

- Will be state wide toward the end of summer.
- Developed some nutrition education materials as sort of a trigger for counseling, to get the client involved.

Program Planning and Evaluation

Uses – Bill Dietz

- Plan to use for population-based systemic surveillance.
- Computer problems/complications need to be incorporated into implementation time and cost.
- Have capacity to link nutrient data with client reports.
- Would be nice to have the FFQ work in a Windows environment.
- How much data capacity do state health departments have? Need someone on site to maintain. Have to deal with confidentiality issues.
- What questions need to be asked to capture whether the FFQ is being implemented effectively? Document process and publish?
- Quality improvement vs. time improvement: track time spent on nutrition education vs. collection of diet/risk information from each client (M. Rodan has some information, not published).

Reports from Each State's Aggregating Data: Jill Leppert, Lucy Zahler

⇒ See the attached slides titled **Missouri Aggregate Data & North Dakota Aggregate Data**

Vision of Future Uses – Bill Dietz

- Need to determine what would be useful to include on a standard “core report” that can be generated annually for state surveillance, programming planning, evaluation, and improvement.
- Organize a meeting with state surveillance people and program planners to determine surveillance uses and what to include on a “standard” report.
- Principal elements for success (for “marketing” the tool):
 1. Willing staff
 2. Computers available
 3. Commitment
 4. Data support personnel
- Cost-benefit analysis and “marketing” as a “cost saver”: Nutrition counseling saves money in the long run (e.g. folic acid).

- Need to increase visibility of FFQ. The NAWD meeting which takes place in April of 2000 in Philadelphia may be a good forum for this.
- Should develop an email list to talk about some of these things.

Validation

Children's FFQ in African American/Hispanic Populations – Robin Blum

- ⇒ See attached slides titled **Update on Validation of Children's FFQ in African American & Hispanic Children.**
- ⇒ See also attached slides from Graham Colditz's presentation titled **Eligibility Analysis.**

Epidemiology

Analysis Plan – Diet and Obesity – PK Newby

- ⇒ See the enclosed slides titled **Analysis Plan – Diet and Obesity.**

Future Plans and Priorities

Financial Considerations – Graham Colditz

- ⇒ See the enclosed slides titled **Effort to Support Diet Assessment**

Fourth Page Considerations

- Currently, the fourth page is slightly different in each state.
- Modular pieces (i.e. physical activity questions, food security questions, and parental feeding interactions) need validation.
- It's important that the fourth page be used to document behavior change.

Universal FFQ

Helaine Rockett
Harvard School of Public Health

June 30, 1999

Overview

- Universal FFQ-
- Layout - order of food groups
- Foods within each category & layout

Features & Benefits

- Universal ffq will provide use of a uniform tool for data collection throughout the country
- Short term benefits:
 - federal level-efficiently collect & use data sent from states
 - state level-comparison with other states
 - local level- one tool to easily collect dietary data from their clients

Features & Benefits

- Universal ffq will provide use of a uniform tool for data collection throughout the country:
- Short term benefits:
- Long term benefits:
 - improve nutrition education
 - guide program planning

Applications

- Women's questionnaire
 - pregnant
 - not pregnant(lactating)
- Children's questionnaire (1-5 years old)
- English & Spanish

Specifications

- Paper ffq will be a four page questionnaire with similar layout of what is in packet.
- Computer Program will have:
 - Direct Entry
 - Paper Entry
 - Editing
 - Viewing of analysis
 - Printout of analysis
 - ascii file of frequencies to be sent to Harvard for analysis

Missouri Aggregate Data – Lucy Zahler

Total # participants: 6507 (from log sheets)

Total # qualified for WIC using 24 hour recall: 6354

Did not qualify: 153

Only 2.4% (153/6507) of all participants did not qualify by inadequate diet risk based on 24 hour recall.

**Mean servings per day by food group
Summary of all Demonstration Agencies
meets MO WIC Program guidelines**

| Age/Category | Grains | Protein | Vegetables | Fruit | Dairy | Meat/Beans | Other |
|-------------------|--------|---------|------------|-------|-------|------------|-------|
| 12-18 m n=698 | 1.6 | 3.7 | 4.1 | 2.3 | 3.2 | 0.5 | 0.5 |
| 19-30 m n=1061 | 2.3 | 4.3 | 4.2 | 2.4 | 4.0 | 0.4 | 0.8 |
| 31-66 m n=1916 | 2.3 | 4.1 | 3.8 | 2.4 | 3.5 | 0.4 | 0.8 |
| Pregn n=982 | 1.8 | 3.4 | 2.7 | 2.2 | 2.3 | 0.3 | 0.9 |
| Lact n=431 | 2.0 | 3.9 | 3.1 | 2.5 | 2.9 | 0.4 | 1.0 |
| Postpar n=616 | 1.8 | 3.2 | 2.5 | 2.0 | 2.1 | 0.3 | 0.7 |
| | | | | | | | 3.4 |

Summary nutrient analysis of FFQs from Demonstration Agencies
(n= 5704)

| Nutrient | RDA | | | | | Mean Intake (SD) | | | |
|------------------|--------------------|---------------------|---------------------|--------------------|---------------------|----------------------|--|--|--|
| | 12-18 mo n= 698 | 19-30 mo n= 1061 | 31-60 mo n= 1916 | Pregnant n= 982 | Lactating n= 431 | Postpartum n= 616 | | | |
| Protein, g | 14 58 (21) | 16 70 (24) | 24 72 (25) | 60 75 (34) | 65 85 (33) | 46 71 (27) | | | |
| Calcium, mg | 600 1087 (436) | 800 1145 (427) | 800 1098 (399) | 1200 1074 (573) | 1200 1273 (515) | 1200 1043 (499) | | | |
| Iron, mg | 10 8 (3) | 10 9 (4) | 10 10 (4) | 30 10 (5) | 15 11 (5) | 15 10 (4) | | | |
| Zinc, mg | 5 7 (3) | 10 9 (3) | 10 9 (3) | 15 10 (5) | 19 11 (4) | 12 9 (3) | | | |
| Vit C, mg | 35 109 (68) | 40 147 (88) | 45 149 (92) | 70 126 (108) | 95 179 (112) | 60 130 (93) | | | |
| Vit B6, mg | 0.6 1.5 (.6) | 1.0 1.8 (.7) | 1.1 2 (.8) | 2.2 1.9 (.9) | 2.1 2.2 (.9) | 1.6 1.8 (.7) | | | |
| Folate, mcg | 35 197 (95) | 50 244 (108) | 75 282 (123) | 400 279 (160) | 280 342 (152) | 180 263 (124) | | | |
| Vit A, mcg RE | 375 1002 (535) | 400 1053 (579) | 500 1140 (593) | 800 1195 (951) | 1300 1531 (900) | 800 1121 (595) | | | |
| Vit E, mg | 4 6 (3) | 6 7 (3) | 7 8 (3) | 10 9 (5) | 12 10 (4) | 8 8 (4) | | | |

MO WIC guidelines for certifying women and children

| Category | Meat and altern. | Milk | Br/cereal/grains | Vitamin C | Dark green Veg | Other F&V |
|--------------------------|------------------|-----------------------------|------------------|-----------|----------------|-----------|
| Children -1 thru 3 yo | <2 | <5 | <6 | <1 | <1 | <3 |
| -4 yo | | <6 | | | | |
| Women -pregnant | | | <6 | | | |
| -BF | <3-1/2 | <4 (adult) <5 (11-24 yo) | <7 | <1 | <1 | <3 |
| -non-BF | <2 | <2 (adult) <3 (11-24 yo) | <6 | <1 | | <3 |

Folate Intake of Pregnant Women in Pilot Agencies by Age Category

RDA = 400 mcg.

| | <16 y n=10 | 16-19 y n=220 | 20-29 y n=635 | 30-39 y n=110 | 40-49 y n=7 |
|--------------------|---------------|------------------|------------------|------------------|----------------|
| Folate, mcg (mean) | 275 | 276 | 283 | 264 | 286 |
| S.D. | (76) | (76) | (157) | (152) | (148) |
| | | | | | |
| | | | | | |

North Dakota WIC Certification Data & HFFQ Nutrient Data '96 - '97

- We looked at the mean nutrient intakes of pregnant women and children 3 to 5 years old by the following variables and found no significant differences:

- Family size (<4 & 4 to 15);
- Annual family income
 - \$0 - 10,000
 - \$10 - 20,000
 - \$21 - 30,000
 - \$31 - 40,000

June 29, 1999

North Dakota WIC Certification Data & HFFQ Nutrient Data '96 - '97

Mean Nutrient Intake of Children 3 to 5 Years by Family Size (preliminary analysis)

| | Small (<4) N=1289 | Large (≥4) N=3188 |
|------------------|----------------------|----------------------|
| Calories (kcal) | 1825 | 1840 |
| Calcium (mg) | 1083 | 1099 |
| Iron (mg) | 10 | 10 |
| Zinc (mg) | 9 | 9 |
| Vit A (RE) | 1154 | 1213 |
| Vit B6 (mg) | 2 | 2 |
| Vit C (mg) | 137 | 137 |
| Folate (mg) | 275 | 284 |
| Mean Income (\$) | 10,034 | 17,903 |

June 29, 1999

North Dakota WIC Certification Data & HFFQ Nutrient Data '96 - '97

Mean Nutrient Intake of Pregnant Women by Family Size (preliminary analysis)

| | Small (<4) N=1351 | Large (≥4) N=1343 |
|------------------|----------------------|----------------------|
| Calories (kcal) | 2088 | 2099 |
| Calcium (mg) | 1218 | 1220 |
| Iron (mg) | 11 | 11 |
| Zinc (mg) | 10 | 11 |
| Vit A (RE) | 1516 | 1546 |
| Vit B6 (mg) | 2 | 2 |
| Vit C (mg) | 146 | 145 |
| Folate (mg) | 304 | 308 |
| Mean Income (\$) | 11,724 | 18,438 |

June 29, 1999

North Dakota WIC Certification Data & HFFQ Nutrient Data '96 - '97

Mean Nutrient Intake of Children 3 to 5 Years by Annual Family Income (preliminary analysis)

| | \$0-10k N=1342 | \$10-20k N=1666 | \$21-30k N=1291 | \$31-40k N=168 |
|-----------------|-------------------|--------------------|--------------------|-------------------|
| Calories (kcal) | 1858 | 1846 | 1809 | 1764 |
| Calcium (mg) | 1091 | 1101 | 1085 | 1120 |
| Iron (mg) | 11 | 11 | 11 | 10 |
| Zinc (mg) | 9 | 9 | 9 | 9 |
| Vit A (RE) | 1224 | 1185 | 1186 | 1166 |
| Vit B6 (mg) | 2 | 2 | 2 | 2 |
| Vit C (mg) | 135 | 140 | 136 | 138 |
| Folate (mg) | 281 | 284 | 279 | 278 |
| Mean Income(\$) | 5,943 | 15,188 | 23,805 | 33,037 |

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North Dakota WIC Certification Data & HFFQ Nutrient Data '96 - '97

Mean Nutrient Intake of Pregnant Women by Annual Family Income (preliminary data)

| | \$0-10k N=827 | \$10-20k N=1096 | \$21-30k N=675 | \$31-40k N=92 |
|-----------------|------------------|--------------------|-------------------|------------------|
| Calories (kcal) | 2126 | 2058 | 2125 | 1988 |
| Calcium (mg) | 1212 | 1213 | 1246 | 1153 |
| Iron (mg) | 11 | 11 | 11 | 10 |
| Zinc (mg) | 11 | 10 | 11 | 10 |
| Vit A (RE) | 1548 | 1486 | 1563 | 1727 |
| Vit B (mg) | 2 | 2 | 2 | 2 |
| Vit C (mg) | 147 | 146 | 144 | 139 |
| Folate (mg) | 306 | 304 | 311 | 289 |
| Mean Income(\$) | 5,754 | 15,195 | 23,628 | 33,116 |

June 29, 1999

Update on Validation of Children's FFQ in African-American & Hispanic Children

Update of Validation Study in African-American & Hispanic Children

Robin E. Blum
Department of Nutrition
Harvard School of Public Health

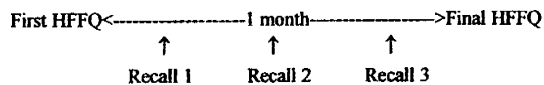
June 30, 1999

Study Overview

- **Objective:**
 - To assess the validity of the use of the Harvard Service Food Frequency Questionnaire (HFFQ) in the diet assessment of low income African-American & Hispanic Children 1 to 5 years old.

Study Overview

- **Study Sample:**
 - 150 African American and
 - 150 Hispanic children 1 to 5 years old.
- **Time sequence of data collection:**



Timeline of Validation Study

- **October '98: Funded by USDA**
 - Planned to run validation study in Missouri WIC sites with @ least 3 months experience with HFFQ;
 - Human Subjects approval.
- **December '98: Established relationship with Truman Medical Center**
 - Study was to begin in spring '98
 - Developed contracts, scopes of work, memoranda of understanding, & Human Subjects application for Truman

Timeline of Validation Study

- **March '99: Presented study protocol to Truman administration**
 - Due to administration change (merger) Truman decided not to take on additional research project.

Timeline of Validation Study

- **April/May '99: Established relationship with KCMC Head Start**
 - Recruited coordinator;
 - Prepared documents (study protocol, consent forms, etc.) for KCMC executive board meeting in June '99.
- **Currently:**
 - Recruited 7 nutritionists;
 - Training scheduled for end of July.

Update on Validation of Children's FFQ in African-American & Hispanic Children

Projected Timeline

- **July '99:**
 - Begin participant recruitment;
- **August '99 - January '00:**
 - Collect data;
- **February - March '00:**
 - Review FFQs & diet recalls;
- **April - June '00:**
 - Analyze data

Eligibility analysis

- Objective:
 - To look at whether or not the HFFQ is a predictor of WIC eligibility based on serving cut-points for different food groups.

June 30, 1999

Eligibility analysis

- Data:
 - Native American and Caucasian children 1 through 2 years old (n=155) and 3 to 5 years old (n = 136) participating in North Dakota WIC;
 - Excluded siblings (only 1 child/family);
 - Used unadjusted nutrient analysis;
 - Compared first recall to first HFFQ based on WIC eligibility cut-points.

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Eligibility analysis (continued)

- Created nutrient cut-points based on WIC eligibility criteria (# of servings/week) & RDA;
- Selected 8 nutrients based on WIC food groups:

| | |
|-----------|------------------|
| – Protein | – Folate |
| – Calcium | – Vitamin A (RE) |
| – Iron | – Vitamin C |
| – Zinc | – Vitamin B6 |

June 30, 1999

Eligibility analysis (continued)

- Created cut-points based on WIC eligibility serving cut-points (serving sizes different for 1 - 2 and 3 - 5 year olds):

| | 1 - 2 | 3 - 5 |
|-----------|--------|--------|
| – Protein | 16 g | 24 g |
| – Calcium | 800 mg | 800 mg |
| – Iron | 10 mg | 10 mg |
| – Zinc | 10 mg | 10 mg |
| – Vit A | 400 mg | 500 mg |
| – Vit C | 40 mg | 45 mg |
| – Vit B6 | 1.0 mg | 1.1 mg |
| – Folate | 50 ug | 75 ug |

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Eligibility analysis (continued)

- Ran tables of eligibility with recall by eligibility with HFFQ for each of the 8 nutrients.

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Eligibility analysis (continued)

Number of 1 through 2 year olds (n=155) eligible by recall or HFFQ based on nutrient cut points.

| Targeted Nutrient | Protein | Calcium | VitA | VitC | VitB6 | Folate | Iron | Zinc |
|----------------------|---------|---------|------|------|-------|--------|------|------|
| Recall | 1 | 46 | 25 | 20 | 33 | 1 | 48 | 97 |
| HFFQ | 0 | 41 | 6 | 9 | 14 | 0 | 90 | 95 |

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Eligibility Analysis - Graham Colditz

Eligibility analysis (continued)

Number of 3 to 5 year olds (n=136) eligible by recall or HFFQ based on nutrient cut points.

Targeted

| <u>Nutrient</u> | <u>Protein</u> | <u>Calcium</u> | <u>VitA</u> | <u>VitC</u> | <u>VitB6</u> | <u>Folate</u> | <u>Iron</u> | <u>Zinc</u> |
|------------------------|-----------------------|-----------------------|--------------------|--------------------|---------------------|----------------------|--------------------|--------------------|
| Recall | 0 | 39 | 7 | 12 | 18 | 0 | 31 | 79 |
| HFFQ | 0 | 16 | 2 | 1 | 2 | 0 | 59 | 69 |

June 30, 1999

PRELIMINARY DATA ANALYSIS PLAN

Advisory Committee Meeting - June 30, 1999
Harvard School of Public Health



What is the relation between dietary composition from ages 2-4 y and obesity at age 5 y among low-income preschool children participating in the North Dakota WIC program?

Study Questions and Hypotheses

1. What is the relation between dietary fat and obesity?

A diet high in fat as a percentage of energy will lead to greater childhood obesity than a diet lower in fat.

2. What is the relation between dietary carbohydrate and obesity?

A diet high in glycemic load will lead to greater childhood obesity than a diet low in glycemic load.

Scientific Rationale

What are potential mechanisms through which dietary composition leads to obesity?

1. **Fat:** lower metabolic efficiency, more palatable, greater energy density, preferred storage
2. **Carbohydrate:** faster rates of digestion, absorption, and insulin secretion for simple and refined cho

Dietary fat, energy density, or glycemic load?

Study design and population

- **Longitudinal** study design of low-income preschool children aged 2-5 y enrolled in the North Dakota WIC Program between January 1, 1995 through June 30, 1998 who have repeated anthropometric and dietary measurements.
- **Sample size:** n=4301, 2135 girls and 2166 boys with ≥ 2 repeat measures, before exclusions.

Dietary exposure measurement

FAT

- a. **Nutrient:** nutrient density - fat/calories
- b. **Food:** WIC fats food group
- c. **Behavior:** fried foods away from home

ENERGY DENSITY

kcal/g or kJ/g

CARBOHYDRATE

- a. **Nutrient:** nutrient density - fiber/calories
- b. **Food:** WIC fruits & veges, breads & cereals groups

GLYCEMIC INDEX

glycemic load - mJ

Covariates and Exclusions

Covariates: sex, birth weight, race, income/% poverty, calories, mom's BMI, WIC nutritional risk, breast feeding history, supplemental bottle history

Exclusions: LBW, VLBW, IUGR, children with special diets and major congenital anomalies

Outcome measurement

How to measure and define overweight?

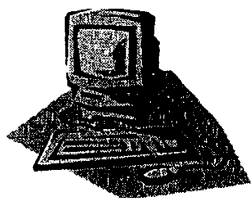
There is no universally accepted measurement or definition of overweight or obesity for children.

- Weight for height Z scores >2.0 ?
- BMI at 85th and 95th percentiles?
- What reference population?
- Overweight Grades I and II, obese and superobese?

Statistical Methods

- A. *Cross-sectional analysis* using linear and logistic regression models which estimate the probability of obesity at one point in time while accounting for missing and correlated data.
- B. *Longitudinal analysis* which models the effect of repeated measurements on *change* in weight and obesity over time.

Repeated measurements



| # | Female | Male | Total |
|----|--------|------|-------|
| 2 | 789 | 812 | 1601 |
| 3 | 614 | 619 | 1233 |
| 4 | 438 | 406 | 844 |
| 5 | 195 | 230 | 425 |
| 6 | 70 | 69 | 139 |
| >6 | 29 | 30 | 59 |
| | 2135 | 2166 | 4301 |

Limitations: the lack of complexity

- No measures of energy expenditure or physical activity.
- Data are limited to Native Americans and Caucasians.
- No measures of environmental and social variables that may modify or shape dietary behavior.

Future research projects I

Nutrition in context

- **Social and food environments**
What are the relations between income, food availability, food storage and food preparation, and participation in related social programs and the development of obesity?
- **Behavioral environment**
What is the relation between energy expenditure, as estimated by hours of television viewing, and the development of obesity?

Future research projects II

Nutrition in context

- **Physical environment**
What are the relations between race, geography, season, and urbanicity and the development of obesity?
- **Data analysis**
Are there are additional methods that may further elucidate the relation between dietary intake *and* nutritional context and childhood obesity?

⋮

Summary: Points for discussion

- How to measure and define outcome variable?
- Additional covariates and/or exclusions?
- Suggestions for statistical modeling, ie. treatment of earlier anthropometric measurements and total calories?
- Adding complexity: the availability of social nutrition data?

Effort to support diet assessment

Categories of activity

- Creating new paper copy for a state
- Creating new computer version of the program for a state
- Running analysis of the data sent back to Harvard
- Maintaining and updating nutrient database

Creating a new paper copy for a state

- Adding a new food includes:
 - determine frequency of use of food (if possible)
 - determine wording of food
 - determine placement of food
 - translation to Spanish.

New paper copy

- Checking on current English usage for foods is the same in that part of the country (donut vs. fry bread).
- Determining that the Spanish usage for foods -- dialect of Spanish spoken in that part of the country (Mexican vs. Puerto Rican).
- Send changes to printer.

New paper copy

- Printer makes changes on all versions (4-6).
- Review changes and make corrections if needed send copies to state.
- Receive changes from state, incorporate or if approved obtain printer ready copy or velouxes.
- Send velouxes or printer ready copies to state.
- (Cost \$2,000)

Creating a new computer version

- Once the paper copy has been okayed, add new foods to program
 - determine the serving size for all ages and sex and the nutrients that must be added
 - new food(s) must be added to all files of the program.

Effort to Support Diet Assessment - Graham Colditz

New computer version

- Modify files
 - for entering paper copy, direct entry, nutrient values of the food(s), food grouping of the food(s), analysis of the food(s) in the diet of the client, and printout of the analysis in all 6 versions of the ffq.
 - compile program and check for errors
 - check program for new record, editing old record, looking at analysis on screen, printing analysis in all 6 versions of the ffq.

Distribute computer program

- Send disk to state for their review.
- Discuss any problems or new requests with the computer version.
- Repeat process again.
- (cost \$15,000)

Running analysis of the data

- Upload disks to an ASCII file and check raw frequency data for problems.
- Write new data dictionary for new computer version of the program for a state.
- Check the data dictionary and the analysis of the new computer version.

Analysis cont..

- Run analysis of program includes:
 - deleting test FFQs
 - deleting outliers of calories
 - creating reports
- Print reports and send to the state.
- (Cost 7,000)

Maintaining and updating nutrient database

- Research on nutrients
- Update nutrient data files
- Distribute new nutrient data files
- (Cost \$1,000)

Effort on diet assessment for WIC projects

- In the last year
 - Helaine Rockett has worked on average 25 hours a week on WIC projects.
 - Morgan/Robin (support staff) has worked on average 5 hours a week on WIC.
 - Steve (programmer) has worked on average 5 hours a week on WIC.

Task Force on Data and Program Planning for the Dietary Intake, ERS/USDA Grant Work Session

**Monday, September 13, 1999
8:30 AM – 4:00 PM**

Co-Chairpersons: Jane Gardner & Graham Colditz

In Attendance:

Deborah Klein Walker (Committee Chair, Assistant Commissioner, Massachusetts DPH
Carol Suitor, Nutrition & MCH Consultant
Jane Gardner, Department of MCH, Harvard School of Public Health
Graham Colditz, Harvard Medical School, Brigham & Women's Hospital, Channing Laboratory
Helaine Rockett, Research Nutritionist, Channing Laboratory, Harvard School of Public Health
Robin Blum, Project Coordinator, Department of Nutrition, Harvard School of Public Health
Morgan Ford, Research Assistant, Harvard School of Public Health
Lucy Zahler, Missouri WIC
Jill Leppert, North Dakota WIC
Jan Kallio Massachusetts WIC
Patricia McKinney, FNS-USDA
Kelly Scanlon, CDC
Liz Metallinos Katsaras, Nutrition Projects Coordinator, Massachusetts DPH

Welcome & Introduction (Deborah Klein Walker, Graham Colditz & Jane Gardner)

- Programmatic & data people working together
- Research & service world together
- This meeting: what do program people need? What is useful in both "worlds"- research & service?

Worksheet questions & discussion

Question 1

What will we use the "standard report" for?

- Current uses: diet, obesity, trends, program quality assurance (by age, race, WIC criteria, status of women)
- Future uses: potential indicators of risk

What analyses should be in the "standard report"?

- Categories: 1) Pregnant women, 2) Lactating women, 3) Post-partum/not lactating women, 4) Kids (separated into 2 groups)
- Contribution file: include top10 (include totals)

- Statistics Report: define N in label (# of participants), delete N column from table,
 - ✓ Keep the following nutrients: Calories, protein, total fat, carbohydrates, calcium, iron, zinc, vitamin C, vitamin B6, folate, total vitamin A, carotene separate, vit E, saturated fat, total unsaturated fat, cholesterol, alcohol
 - ✓ Delete the following nutrients: caffeine, monounsaturated fat, polyunsaturated fat
 - ✓ Add the following nutrients: fiber, magnesium(?)
 - ✓ Add the real RDA, % not meeting RDA, EARs (estimated average requirements, & % meeting EARs)
- Mean Servings Per Week Report- do not send w/ other reports, include it in the data file.
- Mean Group Per Week Report:
 - ✓ rename Mean Group per DAY
 - ✓ include % not meeting individual minimum food group guidelines (food pyramid)- not for vit A or vit C

What is most useful to the States? Which variables best contribute to these analyses?

- Food group/day, nutrient analysis, RDA & % meeting RDA
- What did they eat before & what do they currently eat?
- Separate data into 1st vs. all other certifications
- In future it would be useful to include some of the information from the 4th page on the "Standardized Reports"- need to form working group to standardize 4th page.

How should these be broken down (state, county, group of agencies, etc)?

- 1 or 2 level format/state, depending on size of state and how state system is set up;
- States want larger reports than counties and individual clinics.

How frequently should these be distributed?

- 1st year, 6 month report, and then annually

Does this information get integrated into your current reports?

- Yes.

Question 2

How are the primary data sent to Harvard for analyses?

- Floppy disks
- North Dakota: have data manager (Corey) who links FFQ data w/ WIC certification & vital statistics data. He assigns a unique identifier (deletes name, address, SS, phone #)
- Missouri: send raw data on a disk, NO linkage
- Massachusetts: haven't sent any data yet, but plan is as follows- raw data on disk (in the future the raw nutrient data will be linked to the MIS so will make it easier to link the data)

How are the data cleaned at the state? What protocols are used?

- The data is not cleaned at the state.
- Harvard will assign “practice test identifiers” that states must use to enter “practice FFQs”, this way those “practice FFQs” will be removed at Harvard before running analysis
- Currently, Helaine has parameters for when records are thrown out (considered implausible). This will become part of training as will the “practice test identifiers”.

Question 3

In what format should the report be transmitted back to the states?

- There is too much information/data in the files to send them on disk or FTP.
- Data tape will probably be best format for sending files to states (will need to make sure that each state can use data tape).
- The data tape will include the “Standard Report” as well as contain the ASCII file of raw data.
- Will also send a printout of general state “Standard Report” and a list of the codes for the variables included in the ASCII file.

Question 4

How are the certification, FFQ, and other large data sets linked at the state?

- Need to designate a data manager in each state (like Corey in North Dakota)
- In Massachusetts a 24-A is needed to link FFQ data with birth certificate data. Eventually the FFQ data will be a part of the Massachusetts Information System & easily be linked with WIC certification data.

What programs are they linked to?

- WIC certification data (minimally)
- Birth files 9 defects and certification)
- School health (1st and 3rd graders)
- Head Start
- Early childhood programs
- Lead programs
- In North Dakota they will have the FFQ data as part of the “Health Passport”- each participant will have 1 ID number for all programs (immunization, health programs, Medicaid & insurance, Head Start)

Question 5

What information would be helpful to USDA, CDC, others?

How could this be supported?

Next Steps

- Spread the word!
- Write short, 2 to 3 page summary, including: what we're doing/done, indicators, potential of the FFQ, and what we would advocate for next (something to be handed out at meetings/conferences);
- Showcase FFQ at varying conferences (AMCHP, NAWD);
- Create list of key meetings/conferences and contacts for each:
 - ✓ WIC directors, state/territorial nutrition directors, MCH directors, CSHCN directors, MCH Epidemiology conference, ADA (Public Health Nutrition Meeting), AMCHP, HHS/USDA (National Nutrition Monitoring Act)
- Strategically: create solid cost estimate, political organizing, Nutrition Monitoring Act;
- Write brief reports for MMWR (states w/ help from Harvard & CDC);

**ADVISORY COMMITTEE FOR THE DIETARY INTAKE, ERS/USDA GRANT
MEETING MINTUES**

Channing Laboratory, 181 Longwood Avenue
5th Floor Conference Room
Boston, MA 02115
8:30 AM - 4:30 PM, Monday, September 11, 2000

ATTENDEES

Graham A. Colditz
Jane Gardner
Helaine Rockett
Robin Blum
Carol West Suitor
Jill Leppert
Jon Weimer

Patricia McKinney
Jen Tuttelman
Beth Barden
Liz Metallinos-Katsaras
Deborah Klein Walker
Jan Kallio
Kellye Scanlon

GRAHAM: INTRODUCTION

Review of the Goals:

1. Evaluate and improve the output of the Harvard Service Food Frequency Questionnaire (HSFFQ) to better facilitate nutrition education, food package decision, and referrals, based on the analysis provided through the HSFFQ for children 2 to 4 years of age. – *Jane Gardner will present.*
2. Design, implement, and evaluate the use of aggregate nutrition for program planning and evaluation at the state and national levels -*Helaine has worked on this and will present.*
3. Using prospective data through the WIC program, examine relations between diet from age 2 to 4 and childhood obesity as measured by excess adiposity among 4-year old children. ...*Validation studies in the states. Robin Blum will present.*

See handout outlining goals of the proposal and how the objectives will be achieved.

CAROL SUITOR – IOM COMMITTEE REPORT/SUMMARY OF SYMPOSIUM

Summary of Statement of Task

- Dietary Risk Assessment in WIC Program
 - Interim report, prepared and in review if funded for next year
 - Framework for assessment of dietary risk diet guidelines as criterion.
 - Concerns when diet is incorporated.
 - Food based criterion for diet guidelines.
 - Approaches for using food based approaches in WIC.
 - Cut-off values.
 - Research and tools needed.
 - IOM has copies of most of the tools currently in use.
 - Method for review – conducted by staff of IOM.
- Instruments

-Procedures

Things Committee is asked to do:

- Framework for assessing risk
- Identification *a priori*
- Criteria for identification are different from criteria for framework

Graham Colditz: If we have emerging findings it would be good idea to send them to the committee

Things that would be useful to send to the Committee are published works and sometimes perspectives.

FFQ AND NUTRITION EDUCATION - JANE GARDNER

Printout for Client to take home

- Emphasize long term value of information
- Used as a record

Servings Per Week

- Providers use this first and most
- Now our Advisory Board has given input as to what goes in each food group
- Providers have tried to personalize the mass produced handout
- One suggestion was to put the food pyramid on there and this has been tried but was not liked
- Currently some draw the pyramid on the take-home report
- Client output could be prioritized
- Number of items were selected (for variability) – Provider rarely used
- Pyramid and serving size difficult issue
- A low variety in number of foods does not necessarily mean a poor diet
- Nutrients are used less than foods

Nutrients as a percentage of RDA

- *Carol* - mgood education tool
 - goal is to improve diet
 - aim for this level
 - recommended intake is designed for this use
- This is used quite like “Servings per week”.
- Bar graph on nutrients would be preferred.
- Providers will want to use this more overtime.

Nutrient density vs. RDA

- More difficult to use
- First look at calories and then nutrient density
- They only look at estimated calories only when they use the nutrient density
- But don't take it off the printout because the clients like it as well as the providers
- Would like distribution of calories on there, but not necessarily in nutrition education

Things to do

- Notes which go into the chart

Page 2

“Mean servings per week” by food

- Not in agreement – it is not highly used but doesn’t lower ability to have it
- Maybe there could be a choice to print or not to print (may be a function of technology)
- Can you retrieve the print out later if you choose not to print it right away?

Another use

- Juice fills up fruit category
- Less juice categories on FFQ
- Should this be a counseling issue?
- Jill: Fruit group could have subcategories on fruit juice

Missouri has a lot of information on fruit and food groups

- Would it be useful to have a printout to go with clients?
- All had potential to based on clients’ ffq
- Four sites in ND piloted client printout
- Nice message at beginning
- Gives food groups
- What you eat
- What you should eat
- They can request printout by typing yes or no
- Eventually will reflect the pyramid

The printout has been piloted with pregnant and postpartum women and in a focus group of providers

Providers have a problem with the word “should” and suggest wording should be changed to “your goal” or “try to eat”.

Clients say “should” is okay.

In a discussion regarding the meaning of fats and sweets, the clients did seem to understand Clients like the number to aim at

Quotes from Clients

“I can see for myself what I eat”

“Useful because I don’t know if I eat right”

Percentage of RDAs

- Providers said clients wouldn’t know percentage of RDAs
- Clients want bar graph of RDAs
- Clients understand calories
- How do you present recommended calories?
- Providers want a range

Providers thought 50% of handouts would be thrown out
Most clients when surveyed knew exactly where their printout was

Clients view of printout

-Comments along the lines of “If I had know about the printout, I would have done a better job on the FFQ.”

- Change wording from RDA to “recommended intake”
- Providers get documentation on “recommended intake” vs. RDA.
- EAR on reports for state not on computer printout
- We have RDA on printout because there are RDAs on cans and bottles
- Chart that gives percentage of recommended intake to help clients improve diet – appropriate to use recommended intake in a bar chart
- RDAs are useful for certification as well as education
- Labels are based on 1965
- FFQ’s RDAs are based on 1989

STATE’S INDIVIDUAL FFQS VS. UNIVERSAL – HELAINE

- Maintaining multiple versions of program is a challenge of resources
- Each state has something different
- Most foods are the same on the different state’s questionnaires
- Two Universal Questionnaires
 - women
 - children
 - Missouri has a youth questionnaire for 5 to 18 year olds
- ID will be called ID rather than different state codes

Dairy Section remained the same

Fruit Section Changes:

- Juices were limited to two categories
- Fruits were rearranged
- Apples and pears were put together on the same line
- Peaches moved and apricots removed
- Apple sauce has its own line
- Fruit cocktail was added

Vegetable Section

- Salad dressing/mayonnaise were separated onto two lines.

Snacks

- One pie not two

Main Dishes and Bold

- One type of bean
- Simplified to pork or ham

- No deer
- Liver kept for vitamin A content

Page 4

Designed with the American dietary problems in mind

- Lack of fiber – types of fats used
- Carol Suitor wanted to know if all items had been tested in a low-income population?
- The response was no they had only been tested in the NHS.
- Margarine database that would be used for analysis is kept up to date

Four Modules for Fourth Page besides what is shown

1. Food scarcity
2. Activity
3. Mother and child bonding
4. Food and security

Other Types of questions for the fourth page of the Universal FFQ

- Type of fat vs. total fat
- Vitamins
- Exercise

These could be modules

- Deals with mostly fat, fiber, and vitamins.
- So far no states counsel on types of fat.
- These are questions based on WIC state's concerns.

Vitamin Supplementation

- Try to get vitamins from food rather than supplementation.
- Most women are on a prenatal vitamin.
- Folate is all set in PC version of the program.
- All modules should be tested in a low-income population.

FATS

- Can check as many fats as you want.

Which questions are all WIC states interested in?

-The fiber question – Are you getting at whole grain or fibers?

-All states are interested in fiber and whole grain

-Are there “indicator” foods for whole grains?

Carol warns to be careful in testing questions:

-How whole grain is whole grain bread?

-Do people know what a high fiber cereal is?

Suggestion from *Liz Metallinos-Katsaras*

-If you eat any items in this list mark yes or if you eat any cereals in this list mark no

North Dakota wants to do the fiber question

Vitamins

- Calcium supplement or fortified juice?

Do you take a multivitamin pill?

Jill Leppert commented on example should be prenatal vitamin

No one wants vitamin A question.

There should be two questions

- 1) The multivitamin question
- 2) Are you taking an additional supplement?

Calcium (vitamin supplementation)

-There are other soy questions, for those who are lactose intolerant

-Some states do not have as many calcium fortified foods

Carol Suitor: What sort of resources do we have to put into the development of these questions?

Keep vitamins on the Universal Questionnaire

Vitamins are not universal

North Dakota does not use the vitamin question yet

Not sure if states have the same health questions

The whole 4th page should be approached as modules

WINDOWS VERSION OF THE FFQ - HELAINE

-Note this was not a finished version

Suggestions

- Bigger print
- Truncate choices
- Should client and providers have different screens?
- Concern of Beth Barden: If you offer on paper what can't be offered on computer then the data won't agree
- Are the findings (based on appearance) different than what is seen on screen vs. paper?
- The reason for wanting to go to Universal FFQ is so that there is one and therefore will not have to change five different files
- There is a dichotomy between all WICs and within all WICs
- State need to choose the Universal FFQ or not
- Goal would be to come up with a couple of options for tools

STRENGTHS OF THE FFQ

-ongoing surveillance

-balance

REPORTS

1. **Contribute File**

Based on the nutrients
shows top ten foods on the FFQ

2. **Nutrient report**

Mean %RDA not meeting %EAR

3. **Food Report**

Mean food groups not meeting % Pyramid

Reports are broken down into the following groups:

-children

-women

-breakdown of pregnant women by age can be broken down per site

Are children less than 12 months of age deleted from the database?

North Dakota says yes

Children are divided into three age categories

Age groups

-Do we use RDA standards?

-Do we use WIC standards?

DIET VALIDATION IN HISPANIC AND AFRICAN AMERICAN CHILDREN – *ROBIN BLUM*

Reminder of third aim

Original goal

150 African-American

150 Hispanic

Many attempts on dataset

1st Attempt in Truman Medical Corridor in Missouri

- Merger occurred
- They decided not to take on the research project

2nd Attempt KCMC

- Trained 7 nutritionists
- Headstart had not been using FFQ for 3 months
- Decided it was too soon

3rd Attempt 11/99 Family Health Center

- Used previously trained RDs
- Started collecting data

- Recruited onsite coordinator
- Complete clinical staff turnover

4th Attempt Massachusetts

- Hispanic validation begun in Lynn Community Health Center
 - Recruited and trained on site coordinator and 3 RDs
 - Feed back from Lynn has been positive
- African American validation begun in Blue Hill Corridor Health Center in Dorchester
 - October 6, 2000 Robin and Jane will go to collect data and meet with the RDs

- Missouri WIC sites not used
- Hispanic populations are different in Missouri and Massachusetts, more Mexican-Americans in Missouri, more African-Americans in Massachusetts
- Hispanic FFQs are in Spanish and have slightly different foods

GRAHAM - SUMMARY ON PROGRESS OF ANALYSIS

- 50-55% at 100% power level
- 20-25% in other two categories

ND Data

- cross-sectional piece
- see handout

PEDIATRIC/PREGNANCY SURVEILLANCE

- Nutrition data into surveillance system
- Most from WIC in pediatrics to CDC who generates the reports and the states use the data

Systems updated with cross-sectional records now aim to follow children

- Longitudinal cohort
- Table overtime
- Anemia >>>> outcomes
 - improve
- More states will use the FFQ and include into a report
- CDC will need to accommodate formats but no more than 3
- Include the key indicators: food group intake, nutrients and add to surveillance report
- trends shows no associations between diet and outcomes

Kelly Scanlon (CDC)

- interested in having dietary intake at CDC
- CDC collaborates with states
- Put data into multi-state system for surveillance
- CDC put out reports that look at nutrition status indicators

Changes

- Major changes in new tables will be based on children

- Longitudinal cohort – longitudinal data
- Software is being updated
- More FFQs adopted by states to include in reports
- CDC interested in including key indicators
- Breakdown by demographics for targeting
- 42 states, 7 tribes, DC, Puerto Rico on Peds System
- There are only 20 states for pregnancy data
- Done on voluntary basis
- States would have FFQ capability w/DC
- CDC would work on useful summary items to put out
- Missouri sent data to CDC
- CDC does linkage
- State would send it record data with peds ID

Diet data could be the same sort of system

-the state could do “instant” reports

-If the states want to send data, then CDC would work with it.

For Massachusetts and record linkage

-Link is labor intensive

-Link – Is there any seed money from CDC to do the record linkage?

-CDC has less than a million dollars for grant money to develop this record linkage thing.

-Move the three states together for linkage then expand

-Could link at state level >>>> CDC or Harvard

MASS WIC

-issues in getting data

-linkage is not working well yet

-Noone on staff to do the linkage

-and there is human error b/c it can't be linked therefore poor data

Missouri does not link

We need to find out from Massachusetts and Missouri to find out how to link data.

STATUS OF NUTRITIONAL BILL

-CSFII did not get funding

-NHANES is supposed to pick it up

-Dispute over whom will be in charge of nutritional part

-CSFII has one more year on monetary bill

ADVANTAGES OF THE FFQ

Strength One – Potential for Surveillance

- Saves time collecting data.
- Broader nutrition education than before.
- More accurate and consistent than before.
- Printout makes ??? nutrition of client
- Younger nutritionists love the FFQ.
- Older ones didn't enjoy it, they prefer specificity of 24-hour recall (not limited to Mass)
- Computer aided, i.e. there is no adding etc., it is all automated
- Jen Tuttelman: Training of nutritionists need to be clear on what the FFQ is and what it isn't
- Aggregate level data
 - MASS: Program planning and grant writing
 - Set goals for calcium
 - Missouri: Can compare regions. And can pick up interesting little facts.

Strength Two

- Set goal percent meeting RDA, etc.
- Compare ??? of the state etc., e.g. Missouri

USDA concerned that there is not enough tangible product.

Implicit assumption for funding was show better mousetrap.

-validation not done

-printout not done

-final version not clear

Missouri and MASS responded that it is more efficient and it is drastically changing education.

Note this tool brings change in an area

-tangible product is coming

-no one will move backward

-Jon Weimer conveyed need for a more systematic approach.

Strength 3 – Evidence for Better Counseling

- Aggregate data for planning
- Surveillance but not yet in place
- Time saved at agency level

Systematic approach to certification.

-one size fits all does not work

-guidelines for certification no one for all

-continuity for re-certification

Strength 4 – Reports

- Finally back to certification data for program planning
- Not lots of time to step back
 - This report will facilitate step back and review data etc.

- Give evidence of program planning
 - Use other description, etc., e.g. education
 - Compare within state rather than with other states

Asian population is totally different.

USDA funding for assistance and research.

Targets nutrition education

May change women's lives

Big part of program planning will come from linkage.

What would USDA need for evidence for funding?

WIC community is on hold until the IOM report comes out.

Negatives of System

1. Long in start-up

2. Cost

-huge output initially but later may prove to be cost-efficient

-need to do a cost-benefit analysis

-9-month implementation over the state

-State committing staff

-20/hrs week

-training, materials, etc. (could be shared with other states)

-basically a volunteer project with few resources

-how do you quantify intangibles?

Survey of director and nutritionists

-12 months after implementation

-Asked if they would go back:

3. Each state will not be happy with something on there

-standardized tool does not satisfy

-possible solution with modules

4. It is a challenge to integrate the tools into the existing system.

-coordination of effort with implementation, i.e. IT/MIS/WIC, etc.

Issue of equipment

-IOM Committee would be

Surveillance

-needs stronger case made

-IOM has said that the FFQ is the preferred approach

BILL DIETZ ET AL. AT CDC

- Ongoing surveillance of the states and how to do this.
- What is the core?
- What do we do to it?
- What is the set of indicators we should be monitoring?

Massachusetts will write this up and do a survey in 12 months.
ND survey for several years back.